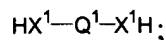


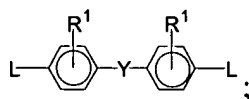
**WHAT IS CLAIMED IS:**

1. A process, comprising a) reacting monomer A with monomer B to give arylene ether monomer C and b) reacting monomer C with another monomer D to give a polymer, wherein:

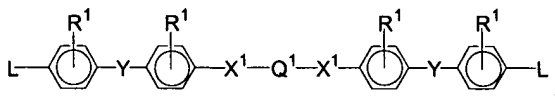
monomer A is



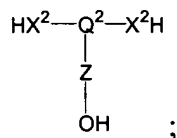
monomer B is



arylene ether monomer C is



monomer D is



$\text{Q}^1$  comprises at least one aryl or heteroaryl group;

$\text{Q}^2$  comprises at least one aryl or heteroaryl group;

$\text{X}^1$  is O bonded directly to an aryl carbon of  $\text{Q}^1$ ;

$\text{X}^2$  is O bonded directly to an aryl carbon of  $\text{Q}^2$ ;

Z is a linker comprising at least one  $\text{---(C(R}^2\text{))}_2\text{---}$  group;

Y is a single bond or a linker group;

L is a nucleophilic aromatic leaving substituent.

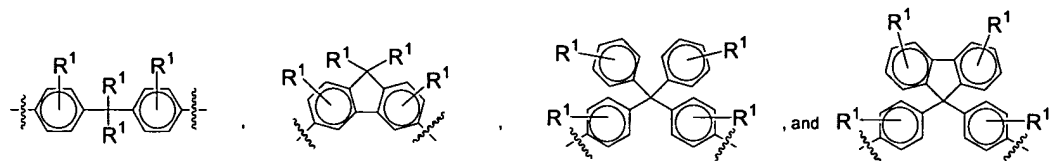
$\text{R}^1$  is independently at each occurrence H, a halogen, an alkyl group, a heteroalkyl group, an aryl group, or a heteroaryl group; and

$\text{R}^2$  is independently at each occurrence H, an alkyl group, or a heteroalkyl group.

2. The process of Claim 1, wherein  $\text{Q}^1$  comprises at least two aryl or heteroaryl groups.

3. The process of Claim 2, wherein  $\text{Q}^1$  comprises a methylenediphenyl group in which the methylene carbon is bonded to at least 2 phenyl groups.

4. The process of Claim 3, wherein  $Q^1$  is selected from the group consisting of

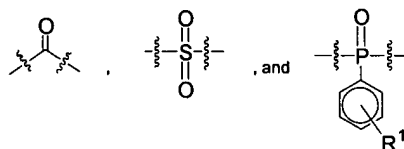


5. The process of Claim 1, wherein  $Q^1$  comprises a polycyclic aromatic ring system or a polycyclic heteroaromatic ring system.

6. The process of Claim 1, wherein Y is a single bond, an alkene or an alkyne group.

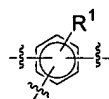
7. The process of Claim 1, wherein Y is a ketone, a sulfone, or a phosphine oxide.

8. The process of Claim 7, wherein Y is selected from the group consisting of



9. The process of Claim 1, wherein  $Q^2$  comprises a 6-membered aromatic or heteroaromatic ring, a polycyclic aromatic ring system, or a polycyclic heteroaromatic ring system.

10. The process of Claim 9, wherein  $Q^2$  comprises



11. The process of Claim 1, wherein Z is  $-(CH_2)_n-$  or  $-(CH_2CH_2O)_n-$ , wherein  $n = 1$  to 10.

12. The process of Claim 1, wherein:

- $Q^1$  comprises a methylenediphenyl group in which the methylene carbon is bonded to at least 2 phenyl groups;
- $Q^2$  comprises a phenyl ring;
- Y is a single bond;
- and

Z is  $-\text{CH}_2-$

13. The process of Claim 12, wherein  $\text{R}^1$  is fluorine.

14. The process of Claim 12, wherein L is a halogen, nitro group, or phenylsulfonyl group.

15. The process of Claim 14, wherein L is fluorine.

16. The process of Claim 12, wherein the methylene carbon of  $\text{Q}^1$  is bonded to at least three phenyl groups.

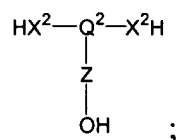
17. The process of Claim 1, wherein reacting monomer A with monomer B to form monomer C comprises heating a mixture of monomer A and monomer B in a dipolar aprotic solvent to at least  $110^\circ\text{C}$ .

18. The process of Claim 17, further comprising cooling the reaction mixture of monomer A and monomer B after monomer C is formed and before monomer D is reacted with monomer C.

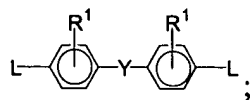
19. The process of Claim 18, wherein reacting monomer C with monomer D to form a polymer comprises heating a mixture of monomer C and monomer D in a dipolar aprotic solvent to at least  $110^\circ\text{C}$ , thereby providing a polymer solution.

20. The process of Claim 19, further comprising filtering the polymer solution while the temperature of the polymer solution is greater than about  $80^\circ\text{C}$ .

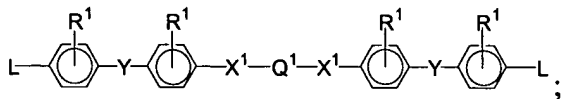
21. A process, comprising a) reacting monomer A with monomer B to give arylene ether monomer C and b) reacting monomer C with another monomer D to give a polymer, wherein:  
monomer A is



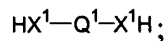
monomer B is



arylene ether monomer C is



monomer D is



$\text{Q}^1$  comprises at least one aryl or heteroaryl group;

$\text{Q}^2$  comprises at least one aryl or heteroaryl group;

$\text{X}^1$  is O bonded directly to an aryl carbon of  $\text{Q}^1$ ;

$\text{X}^2$  is O bonded directly to an aryl carbon of  $\text{Q}^2$ ;

Z is a linker comprising at least one  $-(\text{C}(\text{R}^2)_2)-$  group;

Y is a single bond or a linker group;

L is a nucleophilic aromatic leaving substituent.

$\text{R}^1$  is independently at each occurrence H, a halogen, an alkyl group, a heteroalkyl group, an aryl group, or a heteroaryl group; and

$\text{R}^2$  is independently at each occurrence H, an alkyl group, or a heteroalkyl group.